Measurement and Instrumentation
Issues and Needs for Field Projects

Report on Breakout Session

ASP Science Team Meeting

February 27, 2008

BROOKHAVEN NATIONAL LABORATORY

Charge

- First, we look to the attendees for insights (for DOE consumption) on the status of research in each topical area and potential new directions for ASP response.
- Second, and more immediately, we hope the breakout communications result in improved coordination of ASP project work in the topical areas.

Questions

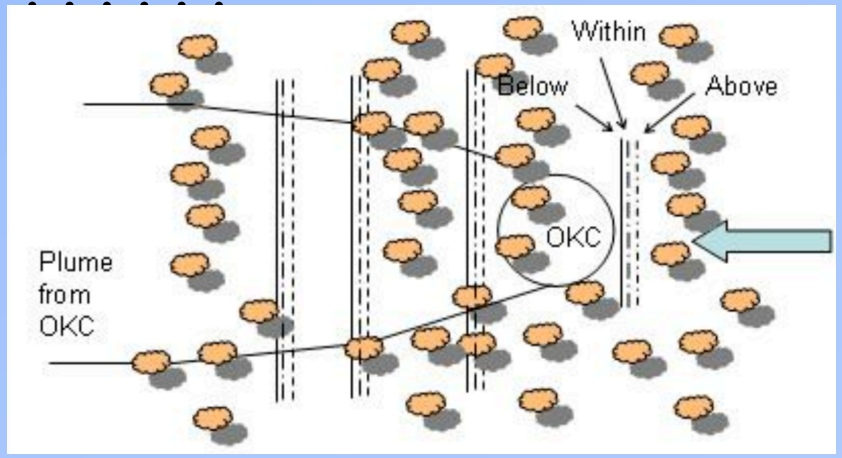
- What measurements are not currently part of our portfolio, but should be? (This includes measurements for which somebody else has a good working method or instrument, and measurement needs that will require development.)

- Consider the issues needed to prioritize the list: ultimate cost to reduce to practice or implement in our program; how would they be implemented (off the shelf purchase or develop and build, permanent installation on G1 with flyalong PhD, etc.); payoff if successful; operational impact on our field activities (for example, weight or manpower issues on G1, accommodating data stream, etc.)

- For instrument development projects already in the program, what is the path to prime-time implementation and the status to date.

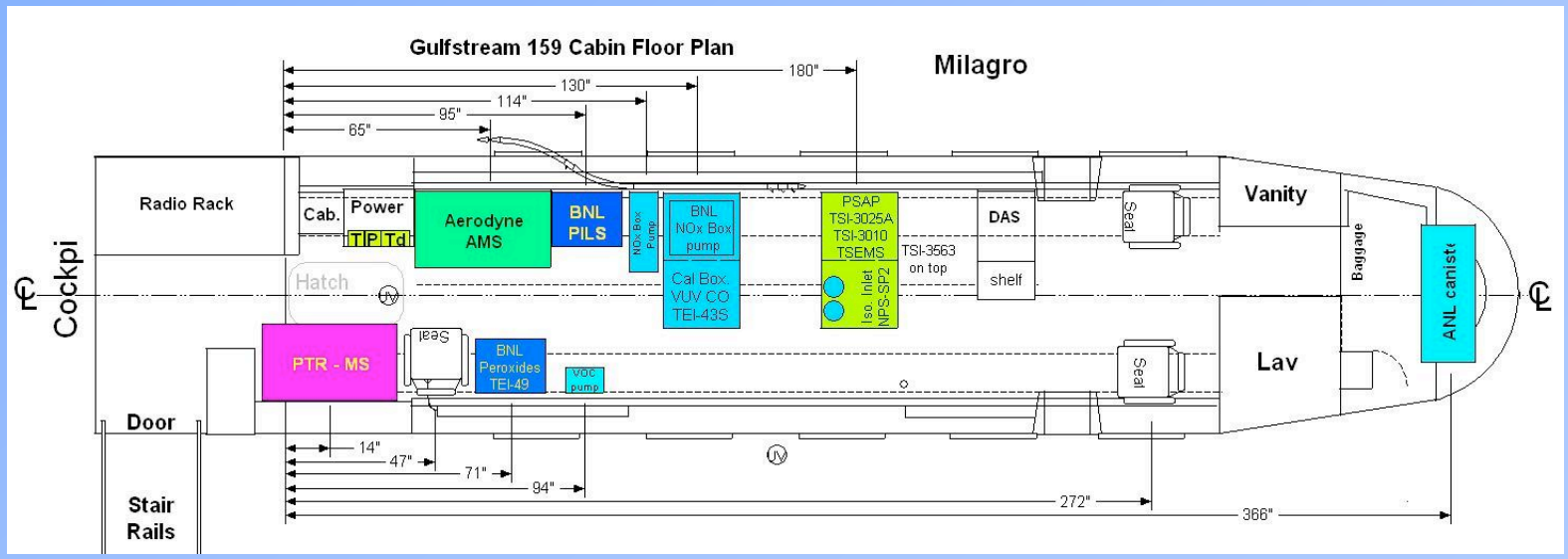
What's New?

- Program Direction
- Speed – Measurements at 10+ Hz becoming available (trace gases, physio-chemical, and aerosol properties)
- Other New Measurements σ_{ap}, multi/single-particle MS, FIMS . . . . . .



BUT . . .

- $’s matter
- Size matters (on the G-1)
  - Footprint (including data)
  - Operations (personnel . . .)

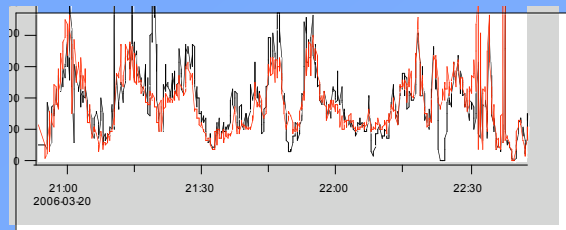


For Instance

- C_{12}/C_{13} CO at > 1 Hz (Isolate C3 biomass)
- Fast O_3
- Consider new applications of existing measurements (Turbulent Dissipation, Microscale Reynolds number)
- Build on/Use/Suggest SBIR products (1-2 yrs)
- Specific Instruments/Technologies/Measurements
- ??? (Community input a must)

Class I

Smaller, faster, better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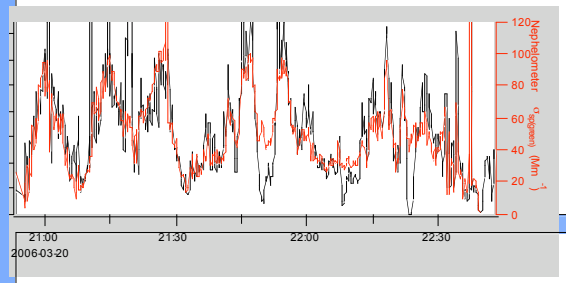
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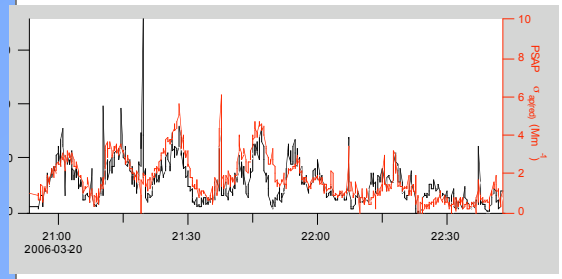
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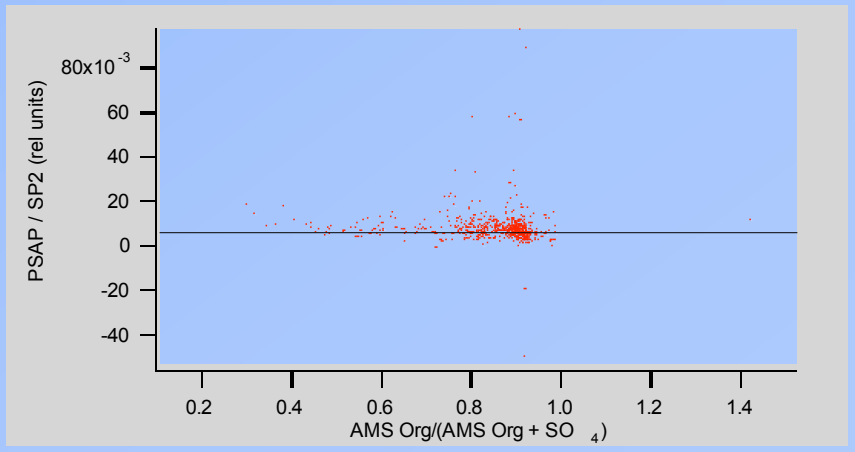
PSAP / SP2 (rel units)
80x10 -3
60
40
20
0
-20
-40
0.2
0.4
0.6
0.8
1.0
1.2
1.4
AMS Org/(AMS Org + SO 4)

Class II

New

- SPLATT on G-1
- High-MW precursors (C12 & >)
- TDL/NH_4/Inlet
- ???